Scientific Areas of Integrated Review Groups (IRGs)

For a listing of the Scientific Review Administrator and membership roster for each study section, click on the study section roster under the study section name within an IRG listed below or go to the study section index (study sections listed alphabetically) and click on the specified roster next to the name of the study section.

Cell Biology IRG [CB]

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TOP

Cellular Signaling and Dynamics Study Section [CSD]

[CSD Roster]

The Cellular Signaling and Dynamics Study Section will review applications that focus on the initiation and execution of programs that control cellular homeostasis and physiology. A distinguishing characteristic of these applications is an emphasis on signaling networks and the coordination of processes that have cell-wide consequences.

Specific areas include, but are not limited to CSD:

- Integrative cell physiology (e.g., stress, metabolism, clocks, cellular modeling)
- Mitosis and meiosis as related to cell cycle regulation
- Cell differentiation and transformation

- Cell size and mass, asymmetry and polarity
- Control of proliferation and senescence
- Programmed cell death and apoptosis especially in the context of stress, growth and transformation
- Proteolytic mechanisms associated with cell cycle, senescence and death
- Computational modeling of signal transduction

The CB Study Sections have the following shared interests within the IRG:

The five study sections were purposely designed with significant overlap, and they distinguish themselves in terms of their overall focus. Overlap of specific key areas is summarized here.

- Cell Growth and Proliferation are areas covered by Cellular Signaling and Dynamics, Nuclear Dynamics and Transport, and Intercellular Interactions; Programmed cell death and apoptosis is shared by Cellular Signaling and Dynamics, Nuclear Dynamics and Transport, and Membrane Biology and Protein Processing. Cellular Signaling and Dynamics will review applications that emphasize signaling networks and the coordination of processes with cell-wide consequences, while Nuclear Dynamics and Transport will cover aspects of growth and proliferation, and programmed cell death and apoptosis related specifically to nuclear architecture and function. This might include, for example, molecular motors controlling chromosome dynamics in mitosis and meiosis, reassembly of the nucleus and other structures after cell division. Intercellular Interactions will cover aspects of growth and proliferation related specifically to alterations in the extracellular environment; Membrane Biology and Protein Processing will cover aspects of integrative cell physiology, and aspects of programmed cell death and apoptosis related specifically to intracellular architecture and cell death-associated proteolytic events. xml:namespace prefix = "o" ns = "urn:schemas-microsoft-com:office:office" />
- All the CB Study Sections include aspects of Signaling Mechanisms and Networks but their foci are somewhat distinct. Cellular Signaling and Dynamics will focus on the coordination of global signaling programs; Nuclear Dynamics and Transport will address signaling from the cytoplasm to the nucleus including pathways that regulate transcriptional control; Intercellular Interactions will cover signaling from the extracellular environment; Cell Structure and Function and Membrane Biology and Protein Processing will cover receptor biogenesis, receptor ligand interactions, down-regulation, and signaling mechanisms related to membrane traffic and cell motility. Thus, it is expected that growth factor signaling might be reviewed by Cellular Signaling and Dynamics, Intercellular Interactions, Cell Structure and Function or Membrane Biology and Protein Processing; small GTPases such as Ras, Rac and xml:namespace prefix = "st1" ns = "urn:schemas-microsoft-com:office:smarttags" />Rho could be reviewed in any of the panels depending on the context of the application. Adhesion signaling would be most likely reviewed in Intercellular Interactions but could be handled by Cell Structure and Function; lipid signaling might be reviewed in Membrane Biology and Protein Processing or Cellular Signaling and Dynamics. Where G-protein coupled receptors interact with ion channels, Cell Structure and Function and Membrane Biology and Protein Processing could review the application. Networks of signaling reactions such as kinase cascades might be reviewed by Cellular Signaling and Dynamics or possibly Nuclear Dynamics and Transport, depending on the breadth of the experiments proposed. Radiation damage induced checkpoint research would be the purview of Cellular Signaling and Dynamics.

- Nuclear Dynamics and Transport and Cell Structure and Function share interest in Motors, Filaments and Cargo. However, Nuclear Dynamics and Transport will focus on cytoskeletal components involved in mitotic and meiotic divisions, and will address protein and RNA cargoes for molecular motors, and filamentous proteins with nuclear counterparts. Cell Structure and Function will cover the role of motors and filaments in the process of cell motility and the motor-based transport of vesicle cargoes; Cell Structure and Function will also provide a second venue for reviewing applications on nucleocytoplasmic transport.

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- Cell Polarity is covered by the Cellular Signaling and Dynamics and the Intercellular Interactions study sections, while Intercellular Interactions will focus on cell polarity related to regulation by cell-matrix and cell-cell junctions.

- Membrane Structure will be covered by Membrane Biology and Protein Processing and Cell Structure and Function; Organelle biogenesis, function, dynamics and protein processing will be primarily reviewed by Cell Structure and Function but may also relate to the applications discussed by Nuclear Dynamics and Transport or Membrane Biology and Protein Processing. This topic includes the generation of membrane bound compartments and organelles such as mitochondria, peroxisomes, and ribosomes. Protein translocation into organelles is included in this category, as are the dynamics of organelles inside cells and their partitioning to daughter cells during mitosis. Membrane traffic including the secretory pathway, endocytosis, exocytosis and phagocytosis will be reviewed in Membrane Biology and Protein Processing with overlap into Cell Structure and Function. While Cell Structure and Function will emphasize the relationship between membranes and the cytoskeleton and motors, Membrane Biology and Protein Processing will have a broader focus on membrane cell biology. Post-translational modifications including ubiquitination, sumolation (reaction with small ubiquitin-like modifier), glycosylation etc. will be shared by Membrane Biology and Protein Processing and Cellular Signaling and Dynamics, with Membrane Biology and Protein Processing handling aspects related to specific processes and Cellular Signaling and Dynamics reviewing applications with a more cell-wide focus.
- Intercellular Interactions will focus on the regulation of Ion Transporters, Channels and Junctions; Cell Structure and Function will focus on the biogenesis, membrane insertion and assembly of ion channels, transporters and junctions, whereas study section Membrane Biology and Protein Processing will focus ion channel and transporter function in and trafficking to organelles. Regarding glycobiology, ICI is the primary home for such applications, and MBPP is the secondary home. MBPP covers the trafficking and biochemical aspects of glycosylation that complements a focus on cell adhesion-related glycobiology applications in ICI.
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- **With the Bioengineering Sciences and Technologies [BST] IRG:** Shared interests include studies of gene and cell delivery, cell imaging, management and analysis of cell biological data, computational or database tools for analysis of cell physiological processes or signal transduction, cell separations, and cell interfaces with biomaterials. If the focus is development of new technology, assignment to BST may be appropriate. If the focus is a basic cell process or principle or the application of an emerging technique to a cell biological problem, assignment to CB may be appropriate.

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Nuclear Dynamics and Transport Study Section [NDT]

[NDT Roster]

The Nuclear Dynamics and Transport Study Section will consider research applications concerning nuclear aspects of growth, cell cycle control, and regulation of programmed cell death and apoptosis. Nuclear architecture, as related to the assembly of the molecular machinery responsible for RNA synthesis and processing, DNA replication, as well as trafficking into and out of the nucleus will be considered. In addition, many signaling pathways ultimately converge on the nucleus. Cytoskeletal structure and dynamics, the movement of protein and RNA cargoes utilizing molecular motors, and organelle biogenesis will also be covered. Nuclear function, structure, and motor driven movement are also integral to mitosis and meiosis, as well as programmed cell death and apoptosis.

Specific areas include, but are not limited to NDT:

- Proliferation and growth control
- Cell cycle regulation, mitosis and checkpoints
- Meiosis
- Programmed cell death and apoptosis
- Filaments, motors and cargoes
- Nuclear architecture, nuclear envelope structure and transport
- Signaling mechanisms and networks that target the nucleus
- Telomeres

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Intercellular Interactions Study Section [ICI]

[ICI Roster]

The Intercellular Interactions Study Section has an emphasis on how cells interact with both their environment and with neighboring cells, and how this regulates processes associated with cell growth, proliferation, differentiation and higher order complexity in tissues and development, including the synthesis of glycoproteins. ICI is also focused on how extracellular signals regulate the cytoskeleton and impact cell behavior.

Specific areas include, but are not limited to:

- Synthesis, assembly, remodeling and glycosylation of extracellular matrix, and the role of carbohydrates in cell-cell adhesive structures
- Cell surface adhesive structures in relation to the cytoskeleton, cell polarity and cell proliferation, differentiation and survival
- Regulation of assembly and function of channels, transporters and gap junctions
- The flow of extracellular signals between distinct cells types, cell populations and ECM
- Cell migration, cell-cell fusion, cell organization and morphogenesis as related to tissue organization and development
- Crosstalk between adhesion receptors and other signaling pathways and regulated proteolysis at the cell surface

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Cell Structure and Function Study Section [CSF]

[CSF Roster]

The Cell Structure and Function Study Section will focus on the molecular structure and function of cells, with emphasis on applications concerned with membrane structure and function, membrane traffic, organelle biogenesis, extracellular matrix (ECM), cell motility and the cytoskeleton, and their related signaling pathways.

Specific areas include, but not limited to CSF:

- Organelle biogenesis (For example mitochondria, chloroplasts, peroxisomes and lysosomes/vacuoles), including organelle proliferation, segregation, and dynamics
- Targeting, translocation, and processing of newly synthesized proteins at membrane compartments
- Cell motility, cytoskeletal dynamics, including their role in morphogenesis
- ECM interactions with the cytoskeleton, and assembly of receptors into junctions and adhesions
- Mechanical properties of cells and the ECM
- Signaling mechanisms related to membrane traffic, cell motility, and cell adhesion.

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- **With the Biology of Development and Aging [BDA] IRG:** Studies of development and aging at the cellular level are areas of shared interest. Cell biological studies may be assigned to BDA when they emphasize a developmental or aging question. If the focus is cell biological, then assignment to CB may be appropriate.

- **With the Bioengineering Sciences and Technologies [BST] IRG:** Shared interests include studies of gene and cell delivery, cell imaging, management and analysis of cell biological data, computational or database tools for analysis of cell physiological processes or signal transduction, cell separations, and cell interfaces with biomaterials. If the focus is development of new technology, assignment to BST may be appropriate. If the focus is a basic cell process or principle or the application of an emerging technique to a cell biological problem, assignment to CB may be appropriate.

- **With the Immunology [IMM]; Infectious Diseases and Microbiology [IDM]; AIDS and Related Research [AARR]; Oncological Sciences [ONC]; Hematology [HEME]; Cardiovascular Sciences [CVS]; Endocrinology, Metabolism, Nutrition, and Reproductive Sciences [EMNR]; Musculoskeletal, Oral, and Skin Sciences [MOSS]; Digestive Sciences [DIG]; Respiratory Sciences [RES], and the Renal and Urological Sciences [RUS] IRGs:** Studies of cellular processes in the context of a specific organ or disease are areas of shared interests. If the focus is on the organ or disease, then assignment to an organ or disease IRG may be appropriate. If the focus is on a basic cell process, on an emerging cell biologic approach, or on a multi-organ disease, then assignment to CB may be appropriate.

- **With the Molecular, Cellular, and Developmental Neuroscience [MDCN]; Integrative, Functional, and Cognitive Neuroscience [IFCN]; and the Brain Disorders and Clinical Neuroscience [BDCN] IRGs:** Cellular studies of the nervous system are a shared interest. If the focus is neuroscience, then assignment to a neuroscience IRG may be appropriate. If the focus is a basic cell process or on an emerging cell biologic approach, then assignment to CB may be appropriate.

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Membrane Biology and Protein Processing Study Section [MBPP]

[MBPP Roster]

The Membrane Biology and Protein Processing Study Section will focus on cellular membranes and protein maturation and degradation. Specific topics include membrane biogenesis; post-translational modification and protein folding; membrane biology including membrane structure and function; vesicular membrane traffic; transport of small molecules across membranes; cell stress response; metabolic pathways including lipid metabolism; degradative processes and proteolytic mechanisms of programmed cell death and apoptosis. Signaling mechanisms regulating these processes would also be appropriate.

Specific areas include, but not limited to MBPP:

- Regulation, functions and mechanisms of protein maturation, including folding, chaperone action, post-translational modification, and proteolytic processing
- Membrane traffic in the endocytic and exocytic pathways; mechanisms of protein quality control and sorting; and mechanisms of vesicle formation, targeting and fusion
- Organization of proteins, carbohydrates, and lipids in cell membranes; metabolism and trafficking of lipids; interactions between proteins, glycoproteins, glycolipids, and lipids; regulation of signaling by lipid domains
- Cellular physiology and molecular mechanisms of regulation of ion and small molecule transport across membranes via channels, transporters or gap junctions
- Integrative cell physiology (e.g., stress, metabolism, clocks, cellular modeling)
- Degradation of proteins by the ubiquitin/proteasome and lysosomes; limited proteolysis by caspases and calpains; and degradation of extracellular matrix and other macromolecules
- Mechanisms of necrosis and apoptosis, with an emphasis on regulation of caspases, proteolytic pathways responsible for elimination of dead cells, and mitochondrial proteolytic pathways

The CB Study Sections have the following shared interests within the IRG:

The five study sections were purposely designed with significant overlap, and they distinguish themselves in terms of their overall focus. Overlap of specific key areas is summarized here.

- Cell Growth and Proliferation are areas covered by Cellular Signaling and Dynamics, Nuclear Dynamics and Transport, and Intercellular Interactions; Programmed cell death and apoptosis is shared by Cellular Signaling and Dynamics, Nuclear Dynamics and Transport, and Membrane Biology and Protein Processing. Cellular Signaling and Dynamics will review applications that emphasize signaling networks and the coordination of processes with cell-wide consequences, while Nuclear Dynamics and Transport will cover aspects of growth and proliferation, and programmed cell death and apoptosis related specifically to nuclear architecture and function. This might include, for example, molecular motors controlling chromosome dynamics in mitosis and meiosis, reassembly of the nucleus and other structures after cell division. Intercellular Interactions will cover aspects of growth and proliferation related specifically to alterations in the extracellular environment; Membrane Biology and Protein Processing will cover aspects of integrative cell physiology, and aspects of programmed cell death and apoptosis related specifically to intracellular architecture and cell death-associated proteolytic events.
- All the CB Study Sections include aspects of Signaling Mechanisms and Networks but their foci are somewhat distinct. Cellular Signaling and Dynamics will focus on the coordination of global signaling programs; Nuclear Dynamics and Transport will address signaling from the cytoplasm to the nucleus including pathways that regulate transcriptional control; Intercellular Interactions will cover signaling from the extracellular environment; Cell Structure and Function and Membrane Biology and Protein Processing will cover receptor biogenesis, receptor ligand interactions, down-regulation, and signaling mechanisms related to membrane traffic and cell motility. Thus, it is expected that growth factor signaling might be reviewed by Cellular Signaling and Dynamics, Intercellular Interactions, Cell Structure and Function or Membrane Biology and Protein Processing; small GTPases such as Ras, Rac and xml:namespace prefix = "st1" ns = "urn:schemas-microsoft-com:office:smarttags" />Rho could be reviewed in any of the panels depending on the context of the application. Adhesion signaling would be most likely reviewed in Intercellular Interactions but could be handled by Cell Structure and Function; lipid signaling might be reviewed in Membrane Biology and Protein Processing or Cellular Signaling and Dynamics. Where G-protein coupled receptors interact with ion channels, Cell Structure and Function and Membrane Biology and Protein Processing could review the application. Networks of signaling reactions such as kinase cascades might be reviewed by Cellular Signaling and Dynamics or possibly Nuclear Dynamics and Transport, depending on the breadth of the experiments proposed. Radiation damage induced checkpoint research would be the purview of Cellular Signaling and Dynamics.
- Nuclear Dynamics and Transport and Cell Structure and Function share interest in Motors, Filaments and Cargo. However, Nuclear Dynamics and Transport will focus on cytoskeletal components involved in mitotic and meiotic divisions, and will address protein and RNA cargoes for molecular motors, and filamentous proteins with nuclear counterparts. Cell Structure and Function will cover the role of motors and filaments in

the process of cell motility and the motor-based transport of vesicle cargoes; Cell Structure and Function will also provide a second venue for reviewing applications on nucleocytoplasmic transport.

- Intercellular Interactions shares with Cell Structure and Function the area of Extracellular Matrix and ECM Receptors. Intercellular Interactions will focus on regulation of adhesive structures by changes in the extracellular environment and receptor signaling and how this impacts cell behavior, while Cell Structure and Function will focus on the extracellular matrix and ECM receptors with regard to their interactions with the cytoskeleton.

- Cell Polarity is covered by the Cellular Signaling and Dynamics and the Intercellular Interactions study sections, while Intercellular Interactions will focus on cell polarity related to regulation by cell-matrix and cell-cell junctions.

- Membrane Structure will be covered by Membrane Biology and Protein Processing and Cell Structure and Function; Organelle biogenesis, function, dynamics and protein processing will be primarily reviewed by Cell Structure and Function but may also relate to the applications discussed by Nuclear Dynamics and Transport or Membrane Biology and Protein Processing. This topic includes the generation of membrane bound compartments and organelles such as mitochondria, peroxisomes, and ribosomes. Protein translocation into organelles is included in this category, as are the dynamics of organelles inside cells and their partitioning to daughter cells during mitosis. Membrane traffic including the secretory pathway, endocytosis, exocytosis and phagocytosis will be reviewed in Membrane Biology and Protein Processing with overlap into Cell Structure and Function. While Cell Structure and Function will emphasize the relationship between membranes and the cytoskeleton and motors, Membrane Biology and Protein Processing will have a broader focus on membrane cell biology. Post-translational modifications including ubiquitination, sumolation (reaction with small ubiquitin-like modifier), glycosylation etc. will be shared by Membrane Biology and Protein Processing and Cellular Signaling and Dynamics, with Membrane Biology and Protein Processing handling aspects related to specific processes and Cellular Signaling and Dynamics reviewing applications with a more cell-wide focus.

- Intercellular Interactions will focus on the regulation of Ion Transporters, Channels and Junctions; Cell Structure and Function will focus on the biogenesis, membrane insertion and assembly of ion channels, transporters and junctions, whereas study section Membrane Biology and Protein Processing will focus ion channel and transporter function in and trafficking to organelles. Regarding glycobiology, ICI is the primary home for such applications, and MBPP is the secondary home. MBPP covers the trafficking and biochemical aspects of glycosylation that complements a focus on cell adhesion-related glycobiology applications in ICI.
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- Biology and Diseases of the Posterior Eye has few shared interests within the CB IRG.

The CB study sections have the following shared interests outside the IRG:

- **With the Biological Chemistry and Macromolecular Biophysics [BCMB] IRG:** Membrane structure and function is an area of shared interest. Applications that focus on the structure of membrane proteins and channels using biophysical approaches may be assigned to BCMB. Applications that focus on cellular functions such as transport and localization may be assigned to CB, particularly Cell Structure and Function or Membrane Biology and Protein Processing.

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- **With the Biology of Development and Aging [BDA] IRG:** Studies of development and aging at the cellular level are areas of shared interest. Cell biological studies may be assigned to BDA when they emphasize a developmental or aging question. If the focus is cell biological, then assignment to CB may be appropriate.

- **With the Bioengineering Sciences and Technologies [BST] IRG:** Shared interests include studies of gene and cell delivery, cell imaging, management and analysis of cell biological data, computational or database tools for analysis of cell physiological processes or signal transduction, cell separations, and cell interfaces with biomaterials. If the focus is development of new technology, assignment to BST may be appropriate. If the focus is a basic cell process or principle or the application of an emerging technique to a cell biological problem, assignment to CB may be appropriate.

- **With the Immunology [IMM]; Infectious Diseases and Microbiology [IDM]; AIDS and Related Research [AARR]; Oncological Sciences [ONC]; Hematology [HEME]; Cardiovascular Sciences [CVS]; Endocrinology, Metabolism, Nutrition, and Reproductive Sciences [EMNR]; Musculoskeletal, Oral, and Skin Sciences [MOSS]; Digestive Sciences [DIG]; Respiratory Sciences [RES], and the Renal and Urological Sciences [RUS] IRGs:** Studies of cellular processes in the context of a specific organ or disease are areas of shared interests. If the focus is on the organ or disease, then assignment to an organ or disease IRG may be appropriate. If the focus is on a basic cell process, on an emerging cell biologic approach, or on a multi-organ disease, then assignment to CB may be appropriate.

- **With the Molecular, Cellular, and Developmental Neuroscience [MDCN]; Integrative, Functional, and Cognitive Neuroscience [IFCN]; and the Brain Disorders and Clinical Neuroscience [BDCN] IRGs:** Cellular studies of the nervous system are a shared interest. If the focus is neuroscience, then assignment to a neuroscience IRG may be appropriate. If the focus is a basic cell process or on an emerging cell biologic approach, then assignment to CB may be appropriate.

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Cell Biology Small Business Activities [SBIR/STTR] Special Emphasis Panel [CB Small Business SEP]

[CB Small Business SEP Roster] xml:namespace prefix = "o" ns = "urn:schemas-microsoft-com:office:office" />

The CB Small Business SEP [CB (10)] reviews grant applications from the small business community that involve application of innovative technology for analysis of cellular processes, including cell imaging and flow cytometry. Often applications will contain complementary software development. Grant applications involving innovative cell biological techniques such as cell preservation, biosensors, and tissue engineering are represented. R01 and R21 applications that are technology intensive are also assigned to CB (10).

The CB Small Business SEP has the following shared interests outside the CB IRG:

Â· **With the Biological Chemistry and Macromolecular Biophysics [BCMB] IRG** regarding microscopic instrumentation, methodologies, or modeling for determining structure/function relationships for biological macromolecules. If the question is biochemical or biophysical, assignment to BCMB may be appropriate. If the question is cell biological, assignment to CB may be appropriate.

Â· **With the Bioengineering Sciences and Technologies [BST] IRG** if the focus is development of new technology, assignment to BST may be appropriate. If the focus is on a basic cell process, then assignment to CB may be appropriate.

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Biology and Diseases of the Posterior Eye [BDPE]

[BDPE Roster]

The Biology and Diseases of the Posterior Eye [BDPE] Study Section reviews applications for basic, applied, and clinical research on the posterior portion of the eye, i.e., that are focused on the structure, function, and disorders of the retina, retinal pigmented epithelium, choroid, and retinal vasculature. It also addresses related disorders such as degenerative and vascular diseases and retinal involvement in diabetes.

Specific areas covered by BDPE:

- Basic research focused on the retina, retinal pigmented epithelium, choroid, and retinal vasculature; anatomy, physiology, biochemistry, biophysics, pharmacology, development, genetics, cell and molecular biology
- Phototransduction processes in rods and cones
- Neural interconnections in the retina and cellular electrophysiology
- Clinical investigations and fundamental research on the etiology, prevention, diagnosis, and treatment of retinal and choroidal diseases, including degeneration, diabetes, and vascular diseases
- Instrumentation and applications of computer technology to the retina

BDPE has the following shared interests outside the CB IRG:

- **With the Biological Chemistry and Macromolecular Biophysics [BCMB] IRG:** BDPE has shared interests with BCMB regarding applications that focus on the biophysical and physical chemistry of transduction-related proteins, e.g. opsins, transducins, and phosphodiesterase; BCMB may

be more appropriate if the focus is either on properties of proteins in general or on emerging biophysical or chemical approaches. BDPE may be more appropriate if the focus is on retina-specific mechanisms or outcomes.

- **With the Genes, Genomes and Genetics [GGG] IRG:** BDPE has shared interests with GGG regarding applications dealing with genetic components of retinal diseases, e.g. gene structure and function, mapping, linkage, or population-based research. GGG may be more appropriate if the focus is on either genetics in general or emerging genetic approaches. BDPE may be more appropriate if the focus is on retina-specific mechanisms or outcomes.

- **With the Biology of Development and Aging [BDA] IRG:** BDPE has shared interests with BDA regarding applications that focus on the development of the posterior eye. BDA may be more appropriate if the focus is development or aging in general. BDPE is more appropriate if the focus is on retina-specific mechanisms or outcomes.

- **With the Integrative, Functional and Cognitive Neuroscience [IFCN] IRG and its Central Visual Processing [CVP] Study Section:** If the question involves neurophysiological and psychophysical research applications involving the visual cortex, IFCN may be more appropriate. If the focus is cell biological or eye-specific, assignment to BDPE may be appropriate.

- **With the Molecular, Cellular and Developmental Neuroscience [MDCN] IRG** regarding (1) trafficking, cytoskeletal interactions, and cell surface or extracellular matrix molecules, (2) neurodegeneration, oxidative and energy metabolism, and excitotoxicity, (3) molecular, structural, and biophysical studies of signal transduction, (4) molecular transporters, ion pumps, and cellular electrophysiology, especially involving calcium, (5) neurochemical and pharmacological aspects of signal transduction, (6) regulation of cell cycle, cell specification and patterning, cell differentiation, and the initiation and regulation of rhythmicity, and (7) the development, aging, and regeneration of neural connections. If the focus is molecular neuroscience, assignment to MDCN may be appropriate. If the focus is cell biological or eye-specific, assignment to BDPE may be appropriate.

- **With the Brain Disorders and Clinical Neuroscience [BDCN] IRG and its Anterior Eye Disease [AED] Study Section:** If the focus is primarily on the anterior chamber of the eye, including inflammation, immunology, and infectious diseases, BDCN may be appropriate. BDCN may be appropriate for applications on uveitis, even if retinal cells are involved, and glaucoma. If the focus is cell biological or posterior eye-specific, assignment to BDPE may be appropriate.

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Cell Biology and Development Fellowship Study Section [F05]

Cell Biology and Development

[Cell Biology (CB) Integrated Review Group]

[F05 Roster]

F05 reviews fellowship applications in the broad areas of molecular, cellular, and developmental biology when the research focus is to understand basic principles of cell structure, function, regulation, and differentiation. The study section encompasses the scientific disciplines covered by the Cell Biology (CB) IRG and the Biology of Development and Aging (BDA) IRG. Examples of specific areas covered are listed below.

- Gene expression and its regulation, including chromatin structure, transcription, RNA processing, translation, and RNA stability
- Nuclear organization, including chromosomal organization and nuclear import and export
- Biogenesis, organization, and functions of the plasma membrane and endomembrane organelles, including transmembrane transport, vesicular transport, macromolecular trafficking, and autophagy
- Protein stability and turnover, including chaperone function and ubiquitin-based degradation and related processes
- Signal transduction at the cellular level
- Cell cycle and cell growth regulation
- Cell senescence and cell death (apoptosis)
- Cytoskeleton and cell motility
- Cell adhesion
- Mitosis, meiosis, and cytokinesis
- Cell polarity
- Extracellular matrix, including its biogenesis, organization, and interactions with the cell surface
- Developmental cell biology, including cell fate determination, cellular basis of embryonic patterning, developmental regulation of gene expression, and cell differentiation
- Germ and stem cell biology

Shared Interests:

With F01 (Brain Disorders and Related Neuroscience) in the area of the anterior eye: Fellowship applications on diseases of the anterior eye may be assigned to F01, while those on basic biology may be assigned as appropriate, e.g., F05 may review fellowship applications on the basic cell biology of the lens.

With F03A (Biochemical and Molecular Neuroscience)in the areas of development, differentiation, progenitor and stem cells, and cytoskeleton: Applications focusing on these functions in neuronal, glial, retinal and other excitable cells may be assigned to F03A; applications focusing on basic cell structure, function, and regulation may be assigned to F05 if using neural cells as model systems. Also, F05 may review fellowship applications on the basic cell biology of the retina.

With F04B (Biophysical and Biochemical Sciences) regarding cellular structure and function: Applications that are concerned with the molecular interactions among molecules that affect cellular structure may be assigned to F04B; applications that are concerned with structural and functional studies of cells and cell components when the emphasis is on molecular and cell biological context may be assigned to F05.

With F06 (Endocrinology, Nutritional Metabolism, and Reproductive Sciences): Applications that focus on signal transduction at the cellular and molecular level in context of cell division, cell cycle, cell senescence and death could be assigned to F05. All processes that address hormone effects in the context of gonadal development through implantation of the embryo, as well as aspects of all stages of pregnancy, parturition, neonatal development and maternal/fetal physiology could be assigned to F06. Applications that focus on stem cell transformation and differentiation are of interest to both panels and should be assigned based on the thrust of the application with F05 more concerned with the basic process of cellular differentiation and F06 more concerned with the endocrinology of the stem cell line.

With F07 (Immunology): F05 may review fellowship applications that utilize cells of the immune system as models to study basic cell function, regulation, and intracellular signaling; F07 may review fellowship applications on the role of the immune system in the host interaction with infectious agents, tumor cells, transplanted cells, self-components, the conceptus/fetus, allergens, and with substances encountered through environmental exposure.

With F08 (Genomics, Genetics, DNA Replication, and Gene Expression) regarding DNA replication and repair and telomere structure and function: F05 may review fellowship applications on nuclear organization and function, including transcriptional regulation, chromatin structure, RNA processing, and nuclear import and export; F08 may review fellowship applications on molecular aspects of gene expression/regulation, chromosome structure and function, meiosis, and mitosis, in prokaryotes and in eukaryotes.

With F09 (Oncological Sciences) regarding the regulation of cell growth, cell division, and gene expression: F05 may review applications when the emphasis is on basic, normal cellular, molecular and developmental biology, including cell cycle, signal transduction, gene regulation, cell motility and differentiation; F09 may review such applications when the emphasis is to understand malignant processes.

With F10 (Physiology and Pathobiology of Organ Systems): F05 may review applications that utilize stem or differentiated cells to elucidate fundamental aspects of cell structure, function and regulation; F10 may review applications that concern the structure and function of differentiated cells in a tissue, organ, or pathology context.

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